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Pattern formation method for semiconductor substrates - uses a silicon cpd. surface pre-treatment preventing the formation of an insoluble skin on the surface of the resist pattern

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Patent Family:

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EP 757290	A2	19970205	EP 96112569	A	19960802	199711 B
JP 9102458	A	19970415	JP 96180602	A	19960710	199725
KR 97012021	A	19970329	KR 9631804	A	19960731	199815
US 6054255	A	20000425	US 96691124	A	19960801	200027 N
			US 97888129	A	19970703	
TW 386180	A	20000401	TW 96108702	A	19960717	200057

Priority Applications (No Type Date): JP 95198296 A 19950803; US 97888129 A 19970703

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KR 97012021 A G03F-007/26

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Abstract (Basic): EP 757290 A

A pattern forming method consists of: (i) treating the surface of a semiconductor substrate with a surface treating agent containing a silane cpd. represented by formula (1):

R14-nSi(OR)n (1)

n = 1 - 3; R = opt. subst. 1-6C (un)satd. hydrocarbon or opt. subst. 1-6C alkylcarbonyl gp.; R1 = H, opt. subst. 1-6C (un)satd. hydrocarbon or alicyclic satd. 3-6C hydrocarbon gp.; (ii) coating the treated surface with a chemically amplified resist to form a resist film; and (iii) exposing the resist film to light via a mask with a desired pattern configuration, and developing the resist film to give a resist pattern.

Also claimed are: (a) identical pattern forming methods which use silane cpds. of formula (2), (3), (4), (5) or (6):

R2R13-nSi(OR)n (2)

R2R13-nSi(NR32)n (3)

(R2R12Si)2NR3 (4)

R14-nSi(OR4)n (6)

R2 = opt. subst. 3-6C (un)satd. hydrocarbon or alicyclic satd. 3-6C hydrocarbon gp.; R3 = H or unsubstd. satd. 1-3C hydrocarbon gp.; R4 = subst. satd. 1-6C hydrocarbon gp., opt. subst. unsatd. 1-6C hydrocarbon gp. or opt. subst. 1-6C alkylcarbonyl gp.; n = 2 - 6; and (b) a surface treating agent for treating the surface of a semiconductor substrate containing a silane cpd. of formula (7):

R14-nSi(OR)n (7).

USE - For pattern formation, partic. on substrates used in the mfr. of semiconductor devices.

ADVANTAGE - Prevents formation of an insoluble skin layer on the surface of the resist pattern, and formation of a footing at the base of the resist pattern. Improves the adhesion of the resist to the semiconductor substrate.

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Increasing adhesion of resist layer to semiconductor substrate - by
treating substrate with organo silicon amide. No Abstract Dwg 0/1

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JP 58188132	A	19831102			198350	B

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JP 58188132	A	19		?